

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/28777

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : B63B 23/00

US CL : 114/357

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 114/348-350, 355, 357, 361-364; 441/35, 38, 39, 44

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------|
| X | US 3,726,245 A (CRITCHER) 10 April 1973 (10.04.1973) Figures 6 and 7; column4, line 17; column 5, line 35-37. | 1-6, 10, 11 |
| X | US 6,460,478 B1 (WIDMER) 08 October 2002 (08.10.2002) Figures 3 and 6; column 3; column 4, line 59. | 1-5, 10 |
| X | US 4,161,796 A (KOSTANECKI) 24 July 1979 (24.07.1979) Figures 2 and 5; column 3. | 1, 3, 6, 10 |
| X | US 3,726,245 A (CRITCHER) 10 April 1973 (10.04.1973) Figures 6 and 7; column4, line 17; column 5, line 35-37. | 1-6, 10, 11 |
| Y | US 2,714,387 A (MELDRUM) 02 August 1955 (02.08.1955) Figure 1. | 7-9 |
| X | US 3,726,245 A (CRITCHER) 10 April 1973 (10.04.1973) Figures 6 and 7; column4, line 17; column 5, line 35-37. | 1-6, 10, 11 |
| Y | US 5,074,236 A (ROBERTSON) 24 December 1991 (24.12.1991), Figures 1 and 2. | 12 |
| A | US 6,129,034 A (SANTA CRUZ et al.) 10 October 2000 (10.10.2000) whole document. | |
| A | US 4,788,926 A (ULLMAN et al.) 06 December 1988 (06.12.1988) whole document | |

☒ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

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"P" document published prior to the international filing date but later than the priority date claimed

"T"

later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X"

document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y"

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&"

document member of the same patent family

Date of the actual completion of the international search

28 December 2003 (28.12.2003)

Date of mailing of the international search report

25 FEB 2004

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C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|--|-----------------------|
| A | US 3,497,887 A (BUREAU, JR.) 03 March 1970 (03.03.1970) whole document. | |
| A | US 1,191,417 A (GILBERT) 18 July 1916 (18.07.1916) whole document. | |